

Camp Lejeune: Achieving Compliance through Pollution Prevention

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Abstract

Despite the numerous environmental challenges associated with efficiently managing a very large, diverse operating installation, Marine Corps Base Camp Lejeune, North Carolina, has made prodigious advances in achieving environmental compliance through pollution prevention and is also continuing to plan and implement pollution prevention projects that are targeted to further reduce compliance issues. In 1997, MCB Camp Lejeune and CH2M HILL undertook a major pollution prevention effort to inventory all major industrial processes, identify the processes that most impact environmental compliance, and make targeted efforts at conducting P2OAs for those processes.

From this effort and from past P2 initiatives, Camp Lejeune has reduced the number of EPCRA reported chemicals from four to one. In addition, Camp Lejeune has reduced hazardous waste generation by over 40%, pesticide/herbicide usage by 95% and solid waste disposal by 30%. The Environmental Management Department at Camp Lejeune is continuing to be proactive in identifying additional pollution prevention opportunities to further reduce EPCRA reporting requirements, hazardous and solid waste generation, and hazardous air pollutants (HAPs). Camp Lejeune is investigating innovative procurement techniques to reduce solid waste generation by an additional 25%. Camp Lejeune is also investing in a significant program to implement a hazmat pharmacy utilizing the hazardous substance management system (HSMS) to control the procurement and use of hazardous materials.

This paper will detail the pollution prevention programs implemented by Camp Lejeune and the direct impact on environmental compliance issues.

Marine Corps Base (MCB) Camp Lejeune, located in southeastern NC on the Atlantic Coast, houses the largest concentration of Marines and Sailors in the world. To achieve its mission, MCB Camp Lejeune operates many industrial processes at numerous locations throughout the installation's 153,000 acres.

MCB Camp Lejeune houses the headquarters of Marine Forces Atlantic, command of all East Coast Marine Corps forces. There are also five major Marine Corps and two Navy commands, and one joint command housed at the installation. The five major Marine Corps commands are: Command Element, II Marine Expeditionary Force (II MEF), which now includes the 2nd Surveillance, Reconnaissance, and Intelligence Group (SRIG), which conducts operational planning and produces and releases intelligence information for Fleet Marine commands.

2nd Marine Division is the ground combat element of the II MEF.

2nd Force Service Support Group is the combat service and support element of the II MEF.

II MEF Augmentation Command augments and reinforces active component headquarters and the Marine Air Group command element.

Marine Corps Base owns the real estate, operates entry-level formal training schools, and provides training and logistical support for tenant commands. The Naval Hospital and Navy Dental Center are tenant commands that provide primary medical and dental care to Marines and sailors and their family members and retirees.

MCB Camp Lejeune supports approximately 144,000 Marines, Sailors, and families. The predominant industrial activities at MCB Camp Lejeune and the Marine Corps Air Station New River (located just northwest of Camp Lejeune) involve the operation, maintenance, and repair of tactical equipment and vehicles. There are also large material uses and wastes generated from training exercises and aircraft maintenance activities.

Pollution Prevention Study - 1997

During the 1997 P2OA, 20 major pollution-generating processes were identified as the most likely to result in additional feasible P2 opportunities from all the known activities at MCB Camp Lejeune. These processes were identified by first listing as many of the pollution-generating processes as possible. These processes were identified using hazardous waste records and reports, the base's SARA Title III Report for TRI emissions, input from base personnel including EMD staff, and information gathered during site visits.

These processes were then prioritized on the basis of 1) regulatory significance, 2) potential pollution prevention opportunities, and 3) hazardous material use/waste generation. The 20 processes with the highest priority were then evaluated in the 1997 P2OA. The ranking of the top 20 processes were as follows:

Process Assessment Score Process Assessment Score 1) Large Parts
 Cleaners 46.75 11) Environmental Contracting 41.5 2) Small Parts
 Cleaners 44.88 12) Pesticide/Herbicide Use 40.63 3) Tactical Equipment
 Painting 43.5 13) Adhesive Applications 40.25 4) Aircraft Painting 43.5 14) Battery
 Operations 39.75 5) Paint Stripping 42.75 15) Large Parts Abrasive
 Blasting 39.25 6) Reprographics/Printing 42.25 16) Landfill Gas Recovery and
 Reuse 38.25 7) Small Weapons Cleaning 42.25 17) Fire Training 38 8) Tracked Vehicle
 Cleaning 42.25 18) Small Parts Abrasive Blasting 38 9) Cannon Weapons
 Cleaning 42.25 19) Brush/Roller Painting 37.25 10) Water Reuse 42 20 Commercial Equipment
 Painting 36.63

Camp Lejeune's P2 Activities and Compliance Effect

During the 1997 P2OA, P2 opportunities were identified for each of the 20 pollutant-generating processes listed above to allow the base to meet P2 goals and assist in achieving compliance with various environmental regulations. These opportunities included process efficiency improvements, material substitutions, inventory controls, contracting changes, and housekeeping improvements. The following details regulatory compliance issues faced by MCB Camp Lejeune (and the MCAS New River) and those P2 activities that have led to improved ease in meeting compliance requirements.

Compliance Issues faced by MCB Camp Lejeune

As a large, industrial installation, Camp Lejeune faces many environmental compliance issues. Those compliance issues for which Camp Lejeune has used pollution prevention to facilitate compliance include Emergency Planning and Community Right to Know Act (EPCRA), Resource Conservation and Recovery Act (RCRA), Clean Air Act and National Emission Standards for Hazardous Air Pollutants (NESHAP), the Federal Insecticide,

Fungicide and Rodenticide Act (FIFRA), Occupational, Safety, and Health Association (OSHA) requirements, and Executive Order 12856.

EPCRA

To position Federal agencies as leaders in pollution prevention, President Bill Clinton signed Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements" on August 31, 1993. As a result, all Federal installations must comply with the requirements of EPCRA of 1986 and the Pollution Prevention Act of 1990. Therefore, Camp Lejeune must annually complete EPCRA Toxic Release Inventory (TRI) Reports for both MCB Camp Lejeune and the MCAS New River. In addition, EO 12856 also mandated that Camp Lejeune reduce reportable TRI chemicals by 50%.

In 1995, Camp Lejeune completed a TRI report for 1994. As a result, four TRI chemicals were found to exceed reportable threshold quantities in 1994 and were reported in Camp Lejeune's 1994 TRI report. These chemicals are methyl ethyl ketone, CFC 113, ethylene glycol, and methylene chloride. Approximately 94,000 pounds of these chemicals were procured for use at Camp Lejeune. For calendar year 1996, Camp Lejeune was required to report only ethylene glycol. The total quantity reported was just over 23,000 lbs.

Camp Lejeune has thus reduced the chemicals reported from four to one and has reduced reportable TRI chemicals procured by approximately 75%. Pollution prevention activities that have resulted in these impressive achievements include the following:

Methyl Ethyl Ketone (MEK). MEK is a component of paints, solvents, and adhesives. MEK use has been reduced primarily through the use of MEK-free solvents and high solids paints that also contain less or no MEK. Several shops have used MEK for de-painting and degreasing parts. This practice has been stopped base-wide and has been replaced by either small cold degreasing units (using premium Type I solvent with filtered units) or using non-toxic citrus-based cleaners. CFC-113. CFC-113 is found in cleaning solvents; corrosion, and moisture preventative compounds; and adhesives. CFC-113 releases have been reduced to below reportable quantities through the identification of CFC-113-free cleaning products. In addition, through the use of

corrosion, lubricant, and preservative (CLP) that is free of CFC-113 ("new" CLP) helped to significantly reduce CFC-113 use on the installation.

Methylene Chloride. Methylene Chloride has been used at the MCAS New River installation to strip grease and paint from aircraft parts that require non-destructive inspections. Camp Lejeune has significantly reduced the amount of methylene chloride that is used through bath life extension and initial part preparation. Camp Lejeune personnel determined that methylene chloride baths were replaced before the useful bath life was identified. In addition, parts that contained caked grease and oils were wiped down with rags prior to entering the methylene chloride tanks.

Camp Lejeune is in the process of procuring an N-Methyl Pyrrolidone (NMP) based heated single stage cleaning system. The system incorporates a fine particle filter system that removes contaminants and extends the bath life.

This effort will alleviate Camp Lejeune's need to meet and maintain any maximum available control technology (MACT) requirements under NESHAP.

Ethylene Glycol. Ethylene glycol is found in antifreeze used in installation vehicles. Camp Lejeune has reduced the amount of ethylene glycol by placing better controls on access and use of antifreeze. Camp Lejeune is still exceeding threshold quantities and may identify recycling technologies that would meet tight quality specifications.

RCRA

Hazardous Waste. RCRA establishes guidelines and standards for hazardous waste generation, transportation, storage, and disposal. Camp Lejeune must manage hazardous waste generated according to the requirements set forth by RCRA. Camp Lejeune must prepare a biennial report that compiles all hazardous wastes that are generated at the installation. In addition, EO 12856 requires that by 1999, Camp Lejeune reduce its hazardous waste generation and disposal by 50% from a 1992 baseline. Because of the regulatory and economic impact of hazardous waste generation can have on the installation, it is a priority of Camp Lejeune to reduce hazardous waste generation. Hazardous waste is generated from a variety of sources at MCB Camp Lejeune and the MCAS New River. Hazardous wastes generated can include:

used decontaminating agents

decontamination kits

acids (generated through vehicle/battery maintenance)

solvents

adhesives/resins

paint-related wastes

alcohol(s)

pesticides/herbicides

other intermittent/one-time hazardous wastes (oxygen canisters, etc.)

Camp Lejeune has reduced the amount of solvent waste generated by 80% since 1992. Pollution prevention initiatives that have led to this reduction include the use of distillation technologies for reclaiming and reusing solvents for painting/paint clean-up. In addition, many shops have formed their own internal micro "pharmacy" system. Through these micro pharmacies, shops have better accountability on solvents and has helped reduce the overall use. Camp Lejeune is

also using Safety-Kleen's Type I Premium solvent that is below RCRA ignitability criteria. All of the solvent tanks use particle filters that help extend the bath lives.

Camp Lejeune has reduced the amount of paint related wastes by nearly 50% since 1992. The major initiative that led to this reduction includes the tighter control of paint use through the micro-pharmacy systems. In addition, Camp Lejeune has made significant progress by reducing the amount of shelf-life expired paint waste that was generated.

Camp Lejeune has also reduced the amount of pesticide/herbicide waste generated by over 90%. They have been able to achieve these reductions through the use of baits, as needed application practice and routine inspections, and overall optimum management practices.

Through these P2 initiatives, Camp Lejeune and MCAS New River has reduced combined hazardous waste generation by 40%. These reductions have meant less potential for regulatory compliance problems, potential for spills, and overall lower reporting requirements.

EO 12856

Through EO12856, Camp Lejeune and other DoD facilities must meet provisions of the Pollution Prevention Act of 1990. The DoD has mandated all of their installations to meet measures of merit (MOMs) which are as follows:

By 1999, reduce releases and off-site transfers of toxic chemicals 50 percent from a 1994 TRI baseline.

By 1999, reduce the disposal of hazardous waste 50 percent from a 1992 baseline.

By 1999, reduce the disposal of non-hazardous solid waste 50 percent from a 1992 baseline.

By 1999, recycle 50 percent of non-hazardous solid waste generated.

By 2000, reduce the number of units that utilize ozone-depleting chemicals (ODSs) 20 percent from a 1995 baseline.

By 2000, reduce the quantity of ODSs at installation by 20 percent from a 1995 baseline.

Ensure 75 percent of DoD acquisitions of new, non-tactical vehicles are alternatively fueled vehicles by the end of calendar year 1999.

Ensure a 50 percent reduction in the active ingredients of pesticides/herbicides from 1993 inventory baseline levels by the end of fiscal year 2000.

Camp Lejeune is well on its way to meeting all P2 goals. Through 1996, Camp Lejeune has met goals for EPCRA chemicals and pesticides/herbicides. A status summary is provided in the table below:

Simplified Summary of MCB Camp Lejeune and the MCAS New River's Pollution Prevention Program

Pollution Prevention Program Elements EPCRA (lb) Haz Waste (lb) Solid1 Waste Disposal (ton) Solid2 Waste Recycling (ton) Pest/

Herb

(lb) ODS

Units ODS Quantity (lb) AFV (vehicles/yr) Baseline Quantity

93,771 446,787 83,800 83,000 4,811 24,948 84,905 280 1996 Inventory

Quantity 23,215 264,898 58,700 24,300 246 24,882 81,007 0 Percent

Remaining 0% 10% 20% 21% 0% 19.7% 15% 75% 1 9.9% remaining on a Fiscal Year basis.

2 23.8% remaining on a Fiscal Year basis.

Conclusions

Considering the vast operations and sheer size of an installation such as MCB Camp Lejeune, controlling hazardous material use, hazardous waste generation, and solid waste is a formidable task. Camp Lejeune has been very proactive relative to its pollution prevention responsibilities and has taken the installation to a higher level in achieving compliance through the pollution prevention

program. Through pollution prevention, Camp Lejeune has lessened reporting requirements, reduced costs in hazardous material and waste operations, reduced solid waste reaching its landfill, and has reduced the manpower needed to track compliance maintenance. The expenditures saved in these programs have helped support further pollution prevention initiatives.